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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/754,914	01/08/2004	Mark R. Hennings	09064.0027USU1	8589

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EXAMINER	
WARREN, DAVID S	

ART UNIT	PAPER NUMBER
2837	

DATE MAILED: 01/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/754,914	HENNINGS ET AL.	
	Examiner	Art Unit	
	David S. Warren	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

As stated in the previous Office Action (July 21, 2005):

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 – 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunn et al. (Inflections: Music from DNA. 1992 – 1995) in view of Long (GB 2,350,469 A). Regarding claims 1, 8, 14 – 19, and 23, Dunn discloses the use of a DNA transcriber for generating music (i.e., Dunn's DNA interpreter is synonymous with transcriber), in accordance with amino acid "codons" (see last paragraph of page one and first paragraph of page two). While Dunn's written disclosure is silent to distinguishing between melodic and harmonic generation, it is clear, that by listening to Dunn's (and Bridge's) compositions (available on the Internet) that both harmony and melody are "transcribed" from the DNA sequences. However, Long clearly discloses the use of sounding both chords (page 5, lines 14 – 16) and arpeggios (page 9, lines 13 – 16) in accordance with amino acids. The Examiner maintains that both chords and arpeggios create "harmony." Therefore, one of ordinary skill would find it obvious to combine the

teachings of Dunn and Long to obtain a DNA-to-music system having both melody and harmony generation. The motivation for making this combination is the Western music has employed harmony and melody to achieve desired emotional expression for hundreds of years. Regarding claims 2 and 9, Dunn discloses the use of codons. As stated supra, by listening to Dunn's music, harmony is used and is synchronized to the codon sequence (see page 2, paragraph 5). Regarding claims 3 – 5 and 10 – 12, Dunn shows that the DNA is used to generate music from the Internet (i.e., music must be in an audio waveform to be heard, and must be from a command sequence to be played on a computer). Regarding claims 6 and 13, Dunn discloses the use of determining the chemical property (see first sentence on page 2) of an amino acid to perform music. As stated supra, the music includes harmony. (Note: The Examiner broadly defines harmony as two or more notes played simultaneously.) Regarding claim 7, as best as can be understood (see §112 rejection discussed supra), generating a melody based on amino acid is old and well-known (as taught by both Dunn and Long), and generating a melody based on harmony would certainly be within the scope of one of ordinary skill (this is the technique used throughout the era of common practice). Regarding claims 20 and 21, the use of music in greeting cards and e-cards is well-known, and Official Notice is hereby taken. To use any music, including that generated by DNA, amino acids, etc., would have been a choice easily made by one of ordinary skill. Regarding claims 22 and 24, Long discloses the use of homology modeling for recognizing differences in similar protein structures (page 15, lines 5 – 8), use of this feature to "diagnose" is an intended use, within the scope of one of ordinary skill.

Response to Arguments

The Applicant argues that since "lots of permutations must be tested" the combination of Long and Dunn does not "transcribe" harmony and melody for a DNA sequence. The Examiner does not concur. Each permutation is "transcribed." While a human composer tests these permutations, the human does not, in fact, transcribe any musical data. In other words, the music is transcribed from DNA (or protein amino acid). For the record, the Examiner assigns a broad interpretation to the terms "harmony," "melody," and "chord."

The Applicant argues that Long does not disclose the production of sounds based on DNA, but instead is based on amino acid structure (and location) within a protein. The Examiner maintains that one of ordinary skill in the art would think to use DNA amino acids in place of protein amino acid to make music. For the purposes of the rejection, the amino acids found in the protein macromolecules of Long, are functionally equivalent to amino acids found in the DNA macromolecule of Dunn. Furthermore, the claim language does not prevent amino acid *structure* and *location* from reading on Applicant's independent claims: The structure and location can be one way to define the amino acid.

The Applicant also argues that the Examiner's rejection is based on impermissible hindsight. It must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it

takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not included knowledge gleaned only form the Applicant's disclosure, such a reconstruction is proper. *In re McLaughlin*, 443 F. 2d 1392; 170 USPQ 209 (CCPA 1971).

Finally, the Applicant argues that Long teaches producing sounds based upon physical location and structure of amino acids in proteins, and that there is no suggestion to produce both melody and harmony form a DNA sequence. The Examiner does not concur. The crux of the Examiner's rejection is that Dunn discloses making a melodic sequence from DNA amino acids. Long discloses making melodies and harmony (i.e., chords) in accordance with amino acids (albeit from proteins). It would have been obvious to one of ordinary skill in the art to make melody and harmony from DNA amino acids. The motivation, as stated in the previous Office Action, is to provide music with emotional expression as has been done for centuries.

Conclusion

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The document to Bryden et al. (2005/0115381) discloses providing music corresponding to DNA (see fig. 5).

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Warren whose telephone number is 571-272-2076. The examiner can normally be reached on M-F, 9:30 A.M. to 6:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on 571-272-2800 ext 37. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dsw

MARLON T. FLETCHER
PRIMARY EXAMINER